THE NATIONAL GEOGRAPHIC MAGAZINE

Vol. XII OCTOBER, 1901 No. 10

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PRESIDENT OF THE UNITED STATES

most honored and best beloved of Americans
an honorary member of the National Geographic Society
died from an assassin's bullet September 14, 1901
in the fifty-ninth year of his age

R. I. P.

VOL. XII, NO. 10 WASHINGTON OCTOBER, 1901

THE NATIONAL GEOGRAPHIC MAGAZINE

NEXT INTERNATIONAL GEOGRAPHICAL CONGRESS TO BE HELD IN WASHINGTON

THE next International Geographical Congress will be held in Washington under the auspices of the National Geographic Society. The acceptance of the invitation extended by the Society has just been received by President Graham Bell from Baron von Richthofen, President of the Executive Committee of the last Congress. This will be the first time the Congress will have assembled in the Western Hemisphere, so that the event will be of much importance to American geographers. The Congress will not be held until 1904, which will allow ample time for the preparation of a program and of a series of excursions to points of geographic interest.

The object of the Geographical Congresses is to stimulate interest in geographic work, and also to promote harmony in methods of work. It is now thirty years since the first Congress was held, at Antwerp. In 1869 the people of Belgium, by popular subscription, had raised a fund to erect statues to the great Flemish geographers, Mercator and Ortelius. The feeling that the work of these famous men of the sixteenth century deserved more than local homage led to the arrangement for an international festival at Antwerp in their honor. The festival took place August 14–22, 1871. Many geographers from many nations gathered in the old Flemish town, and at the meeting papers of much scientific importance were read. So great was the interest and enthusiasm of all, and so apparent the advantage of such a meeting of geographers of all nations, most of them with different ideas and different methods, that a resolution was passed to continue the Congress periodically. The name given to the first Congress was "Congrés des Sciences geographiques, cosmographiques, et commerciales," the importance of the commercial element in a strictly geographical sense being thus recognized definitely.

At this time a revival in popular interest in explorations swept over Europe. The discoveries of Livingstone during the preceding years in the heart of Africa had awakened the world to the immense unknown portions of the earth's surface. Then came Stanley's march across Africa and the tremendous

excitement aroused by his discoveries of millions of people along the Kongo. Geographical societies were founded everywhere. In the ten years from 1871 to 1880 thirty-nine important societies were founded, whereas only about twenty had existed before that decade. Chairs in geography were established at different universities, and the applications of geography to education, to commerce, and to national policy were everywhere recognized.

The second Congress was held in Paris in 1875. Ferdinand de Lesseps, then at the height of his fame, President of the Geographical Society of Paris, presided. The meeting marked an advance in enthusiasm and numbers.

The third met at Venice, six years later. It was carried out on a grander scale than either of its predecessors and was given national importance by the Italians. The King and Queen of Italy and the highest political officials were present at the opening ceremony. The Congress was specially noted for the magnificent exhibition organized by the Italian Geographical Society.

In connection with the Paris Exhibition of 1889 an international conference on geography was held, which was afterward adopted as the fourth International Geographical Congress. Some very valuable papers summarizing the geographic work done by the principal nations of Europe during the nineteenth century were presented to the conference.

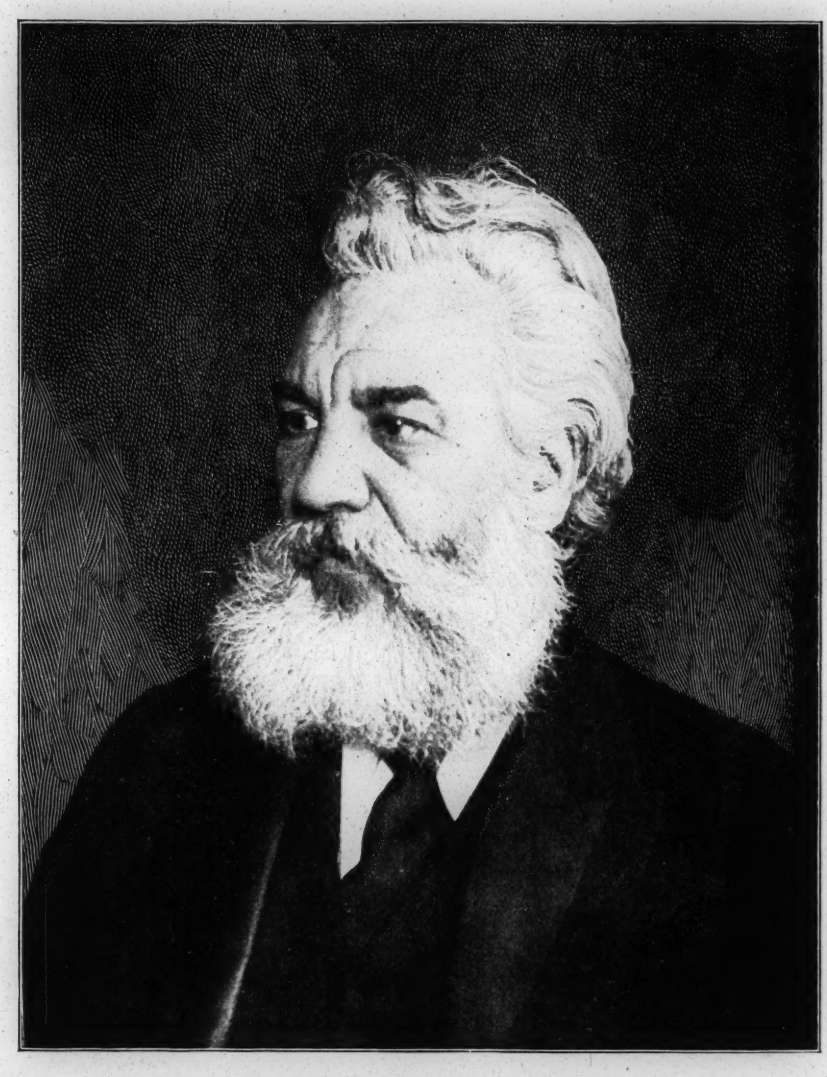
In the summer of 1891 the city of Berne celebrated the seventh centenary of the foundation of the town, and, at the earnest invitation of its citizens, the fifth Geographical Congress was held in connection with the celebration. A good exhibition of maps and geographical text books, for the most part by Swiss geographers, was the chief feature of interest. At this Congress the members voted to hold future meetings not oftener than once in three years or more rarely than once in five.

London was the scene of the sixth Congress, which was held under the auspices of the Royal Geographical Society. This was the first Geographical Congress at which the National Geographic Society had representatives, for at the time of the preceding meeting the society had been in existence but three years. Gen. A. W. Greely, U. S. A.; Mr. W. W. Rockhill, and Miss Eliza R. Scidmore represented the Society at this meeting. Polar explorations received considerable discussion, in which, naturally, General Greely took a prominent part.

Meantime there had been a growing feeling that the part played by Americans in the promotion of exploration should be recognized by a meeting of the Congress in the United States, and at this Congress a cordial invitation by the National Geographic Society to hold the next meeting in Washington was in the hands of our representatives. It was deemed advisable, however, to convene in Berlin.

At the Congress held at Berlin in the summer of 1899 as many as 1,600 persons were enrolled as members actually in attendance. Baron von Richthofen, president of the Geographical Society of Berlin, and recently appointed Foreign Minister of Germany, presided over the sessions of the Congress, which were held in the building of the Prussian House of Representatives. One pleasant feature of the meeting was a series of excursions to points of geographic interest within a few hours of Berlin. The National Geographic Society was represented by the following members: Hon. Andrew D. White, United States Embassador to Germany; Gen. A. W. Greely; Dr. Marcus Baker, of the U. S. Geological Survey; Prof. Wm. M. Davis, of Harvard University, and Miss Eliza R. Scidmore.

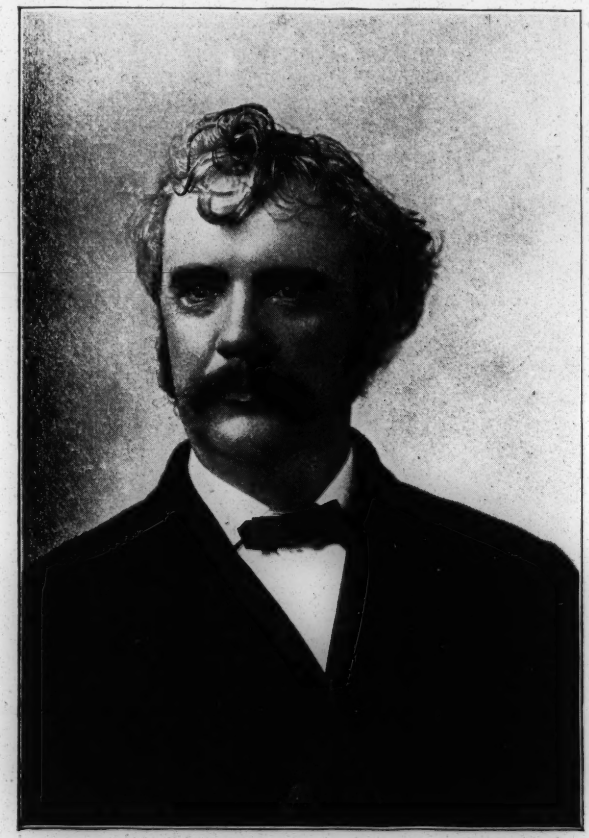
The invitation of the Society to hold the next Congress in Washington under its auspices was informally renewed.



Alexander Graham Bell, LL. D.
President National Geographic Society

Later a formal invitation was extended by President Graham Bell on behalf of the Society. By the courtesy of Hon. Andrew D. White the invitation was presented to Baron von Richthofen and has been accepted by the Executive Committee. As President von Richthofen in his letter of acceptance says, "There is indeed no place better fitted for geographers to assemble than Washington, which is the great center of scientific geographical exploration in America and the distinguished workshop of a considerable number of eminent men."

It is in fact appropriate that the enormous part contributed by Americans to geographic progress during the past century and the present activity in geographic lines of work maintained by the United States Government, by geographic societies, and by private enterprise should be recognized by a meeting of the geographers of the world in the center of geographic enterprise in the Western Hemisphere.



W J McGee, LL. D.

Vice-President National Geographic Society

In this limited space it is possible to mention only one of the achievements by Americans in exploration. At the time of the Louisiana Purchase, in 1803, the immense tract to the west of the Mississippi was a blank on the maps, even the existence of the Rocky Mountains was not hinted at in the geographies and atlases of the time; but today almost every mile in this vast territory is as well known as England or France. And on the other continents Americans have done their share—in Africa, in Asia, and in the polar regions.

But the purposes of a Geographical

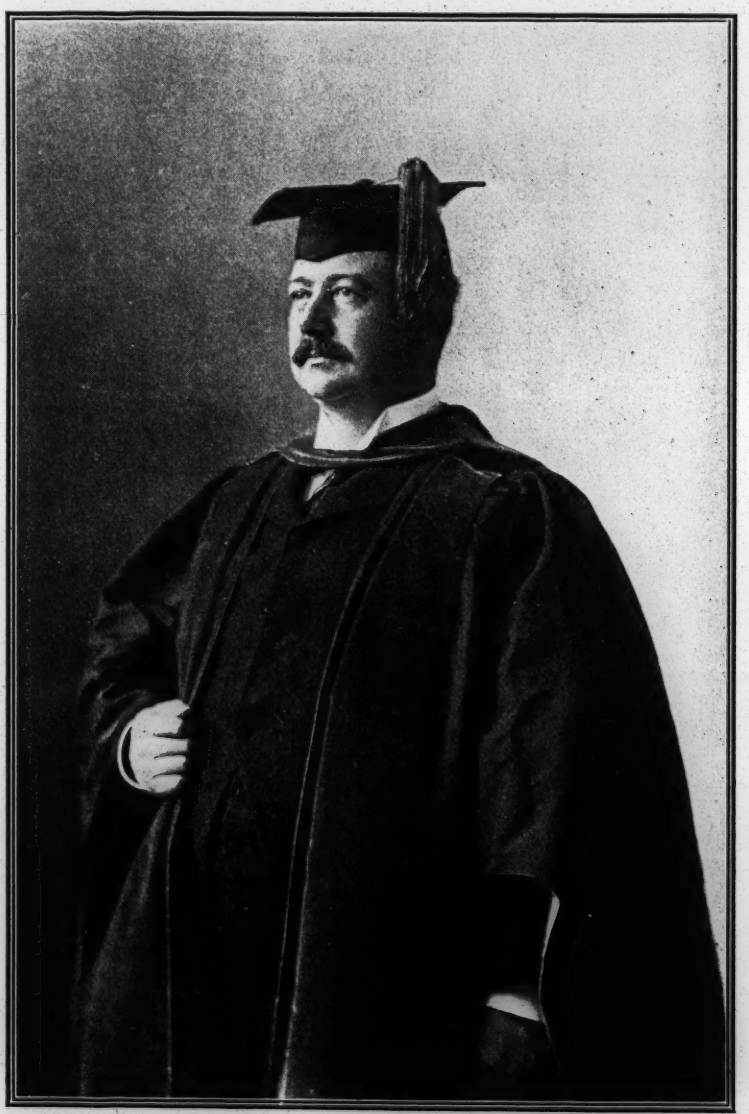
Congress deal more with the present than the past. Today the United States Government spends annually several millions of dollars for scientific research, nearly every dollar of which goes toward geographic progress. The Smithsonian Institution, with its great museums and splendid Bureau of Ethnology; the Geological Survey, the Coast and Geodetic Survey, the Weather Bureau, the Fish Commission, the Census Bureau, the General Land Office, the Biological Survey, the Hydrographic Office, the Bureau of Forestry, the great bureaux of Statistics and Commerce of the Treasury Department and of the Department of Agriculture, and the Division of Military Information of the War Department, are among the institutions engaged in promoting geographic research.

Gen. A. W. Greely, U. S. Army

Gold Medalist of the Royal Geographical Society and of the Société de Géographie de Paris

The National Geographic Society of America, the host of the next International Geographical Congress, represents

every section of the country in its membership. Within a few days the cornerstone will be laid of a large and handsome structure, the Hubbard Memorial Building, which is to be its home in Washington. Because of its central location the Society is fortunate, in that it can have the assistance, in making the Congress a success, of the other geographic societies of America, of whose hearty cöoperation it has been assured. It has been suggested, and it is to be



Hon. Seth Low

President American Geographical Society

hoped it may be found practicable, to hold sessions of the Congress also in other cities: In New York, in conjunction with the American Geographical Society of that city, a portrait of whose honored president, Dr. Seth Low, appears on another page; in Boston, with the Appalachian Mountain Club, and in Philadelphia, Chicago, and probably in San Francisco and Seattle, in conjunction with the noted geographic societies of these cities.

The National Geographic Society will hope to offer its guests an attractive series of excursions to points of geographic interest. In the letter of invitation the following possible excursions, each one of which would be a geographic lesson, are suggested:

"While it might be premature to suggest special excursions to points and regions of geographic interest, your attention is asked to the fact that Washington is situated in the midst of natural and cultural features of such character as to appeal to geographic students. Niagara Falls is but a few hours in one direction, the Natural Bridge of Virginia is near at hand in another, and the Mammoth Cave of Kentucky but a short journey in a third direction. The metropoles of eastern United States — Boston, New York, Philadelphia, Baltimore, Richmond — are so near that it would be possible to hold a session in one or more of these cities.

"Chicago is only 1,300 kilometers (23 hours) away, and a session might easily be held there. Denver, the gateway to the Rocky Mountain region, is within 3,000 kilometers (2¼ days), and the Grand Cañon of Colorado, Great Salt Lake, and Yellowstone National Park are only a little farther. Even the remotest parts of the country are now easily accessible. California is but 4,350 kilometers (3⅓ days) from Washington at The Needles and 4,900 kilometers (3¾ days) at Los Angeles, while San Francisco, at the Golden Gate, is only a little over four days from the National Capital. From these points Mt. Shasta and Yosemite Valley are readily accessible, while the notable scenery of the Selkirks and other mountains in Canada, the peaks and glaciers of Alaska, and the picturesque plateaus and historic cities of Mexico are also within easy reach, the City of Mexico being only 4,600 kilometers (3½ days) from Washington.

"The members of the National Geographic Society feel that these and other features of geographic interest are worthy the attention of the distinguished savants accustomed to attend the sessions of the International Geographic Congress, and they would feel highly honored by the occasion of welcoming their colleagues from beyond the Atlantic to their own field of work and thought." G. H. G.

PEARY'S WORK IN 1900 AND 1901

"PEARY has circumsledged Greenland, discovered most northern land in the world. Returns 1902 with Pole," says Mr. Bridgman, Secretary of the Peary Arctic Club, in a telegram to the NATIONAL GEOGRAPHIC MAGAZINE from Sydney, C. B., September 13, 1901.

A detailed statement of Peary's very important work during the past two years follows:

On April 15, 1900, Peary left Fort Conger, 81° 44′ north latitude, and, accompanied by his faithful Henson and five Eskimo, crossed Robeson Channel to the Greenland coast and followed it

on foot and over the sea ice to the northward. He had devised an ingenious scheme for making his little force as mobile as possible. Each sled was stocked with a complete outfit of provisions as though it were the only store from which the party had to draw. All hands used from it until it was emptied, when it was sent back in charge of its Eskimo driver and drawn by only two of the dogs. The other dogs were attached to the remaining sleds. In this way two of the Eskimo were sent back on April 26, and two others early in May.

Lockwood's farthest North Cairn of May 13, 1882, was opened May 8, and its records were taken; and at Cape Washington, the headland seen by him fifteen miles northeast, in 1882, another cairn was erected and a copy of the "Farthest" record and additional memoranda were deposited. Peary pushed on, and at 83° 39″ north rounded the northern extremity of Greenland, finding the coast at this point to trend rapidly eastward. There, on the most northerly known land in the world, Peary built a cairn, in which he deposited records, etc.

Peary then struck over the sea ice for the Pole, but was able to advance only to 83° 50′ north, when he was stopped by the broken pack and much open water. Retracing his steps, Peary pushed on along the Greenland coast, all the time eastward, about 160 miles beyond Lockwood's farthest, to latitude 83° north, longitude 25° west, or approximately but little more than a degree from Independence Bay, discovered and named by him July 4, 1892. The reconnaissance ended with a definite demonstration of the western and northern coasts of Greenland.

A pronounced change in the character of the coast was found beyond Cape Washington, the bold, precipitous headlands and deeply cut fjords being succeeded by a low rolling foreland, suggesting possible glaciation at some earlier period; and all along the northern coast much open water was met. Bear, musk oxen, hare, and lemming were killed in the newly discovered country, affording an ample supply of fresh meat for men and dogs; and a stray wolf was seen. Having practically connected his work of eight years before with that of 1900, and completed the determination of the northern boundary of Greenland, Peary, on May 22, turned back, following practically the line of his outward march, and on June 10 arrived at Fort Conger, having been three months in the field without accident, illness, or serious mishap of any kind to himself or any of his party.

Peary's own estimate of his work in 1900 is given in a letter to Mr. H. L. Bridgman, from which the following extracts are taken:

"CONGER, *April 4, 1901.*

"MY DEAR BRIDGMAN: It gives me great pleasure to present to the club the results of the work of 1900.

"First. The round of the northern limit of the Greenland archipelago, the most northerly known land in the world; probably the most northerly land.

"Second. The highest latitude yet attained in the Western Hemisphere (83° 50′ north).

"Third. The determination of the origin of the so-called 'paleocrystic ice' (floe berg), etc.

"Considering that I am an old man, have one broken leg and only three toes, and that my starting point was Etah, I feel that this was doing tolerably well. It is almost a thousand years since 'Eric the Red' first sighted the southern extremity of the archipelago, and from that time Norwegians, Dutch, Danes, Swedes, Englishmen, Scotchmen, and Americans have crept gradually northward up its shores, until at last, through the instrumentality and liberality of the club, its northern cape

Lieut. Robert E. Peary

has been lifted out of the Arctic mists and obscurity. It seems fitting that this event, characterized by Sir Clements Markham as second in importance only to the attainment of the Pole itself, should fall in the closing year of the century. If I do not capture the Pole itself in this spring's campaign, I shall try it again next spring. My gratitude and respects to all the members of the club.

"Always most sincerely,

"PEARY."

"Dr. Dedricht takes this letter south, to be sent by natives to Cape York, thence by whaler to the British consul at any civilized port."

Peary sends to the club a complete and detailed chart of his newly discovered coast and other work, reserving until the completion of his work the nomenclature and its publication.

Having eliminated the Greenland archipelago as a desirable route to the Pole, and no further advance northward being possible until the opening of the season of 1901, Peary decided that his next attempt would be from Cape Hecla, the northern port of Grinnell Land, and from Fort Conger as a base. Deciding thus to winter at Conger, the autumn

Mrs. Josephine D. Peary

was spent in hunting and obtaining the necessary fresh meat for men and dogs. So diligently was this work prosecuted that it was not suspended on the approach of Arctic night, and hunting parties were actually in the field during every moon of the winter. Game, principally musk oxen, was found much more abundant in the Lake Hazen country, thirty or forty miles westward of Fort Conger, than in its immediate vicinity; and it proved more feasible, therefore, to subsist the dogs where the meat was killed than to pack it across the country to the coast. Snow igloos were built, and in these Peary and his hunters practically spent most of the winter, the rations of the hunters being supplemented from the supplies found at Conger. In all, nearly 200 musk oxen were killed and either consumed by the expedition or packed for its later demands.

Peary, accompanied, as in the previous year, by Henson and five Eskimo, left Conger April 5, 1901, for the north by the way of Cape Hecla; but after some ten days' march along the ice both the men and dogs proved to be out of condition and unfit for the most arduous work certainly ahead of them. Unwilling to risk the success of the undertaking with an inadequate force, or to imperil the lives of any of his party, Peary retraced his steps and returned in good order and without loss to Fort Conger. Late in April, with his entire force, Peary retreated southward to open, if possible, communication with the club's steamer of 1900, from which nothing had been heard. The *Windward*, fast in her winter quarters at Payer Harbor, near Cape Sabine, with Mrs. Peary and Miss Peary on board, prisoners in the ice for nearly eight months, was reached May 6, and in her Peary made his headquarters until the auxiliary ship of 1901 should arrive.

Open water came early at Cape Sabine, and July 3 the *Windward* extricated herself from the ice and, crossing to the east side of Smith Sound, devoted July to a successful hunt for walrus in Inglefield Gulf to provide food for natives and dogs during the fieldwork of 1902. One hundred and twenty-five were captured and landed at Cape Sabine, the *Windward* recrossing the sound to Etah, Peary's headquarters of 1899–1900, where she awaited the *Erik*, which arrived on August 4, fourteen days from Sydney, C. B. After several weeks of further preparation at Etah, the *Erik* carried Peary across Smith Sound and landed him and his equipment and supplies on the south side of Herschel Bay, ten miles south of Cape Sabine, his headquarters for next winter.

Peary's winter arrangements at Cape Sabine insure comfort, and, with an ample supply of provisions pushed along the route to Fort Conger, he expects to take the field with the returning light of 1902, fully rested and in the best possible condition.

During the entire two years since he had been heard from Peary's health was excellent, and the accident to his feet at Fort Conger, in 1899, caused him but slight inconvenience and in nowise impaired his efficiency in the field. During the autumn he expects to make an extensive reconnaissance of the interior and the western coast of Ellesmere Land, with a strong probability of discovering natives hitherto unknown to white men.

THE WEATHER BUREAU*

By Willis L. Moore, LL. D., Chief U. S. Weather Bureau

ABOUT the only knowledge that most people have of the workings of the United States Weather Bureau of the Department of Agriculture is gathered from the daily prediction of rain or snow that they encounter at the breakfast table as they glance over the morning paper. They base their estimate of the utility of the weather service on the accuracy of the predictions thus hastily scanned, and many are prone to inquire whether it is true that this service has really made a place for itself in the great industrial economy of our country; whether or not an adequate return is made for the expenditure of over $1,000,000 annually; whether the science of weather forecasting has reached its highest degree of accuracy, and whether it holds out possibilities of future improvement. They would doubtless be amazed if they knew the thousand and one ramifications through which it reaches, daily, probably more than one-half of our adult population.

The United States Government spends more for scientific research than any other country in the world. Today every wheel turns with scientific precision, and the arts, the manufactures, and the commerce of this wonderful country are, by the aid of systematic knowledge, being developed far beyond the dreams of the most optimistic person of a quarter of a century ago. The ingenuity of the Yankee and the skill of the American mechanic are only physical and outward manifestations of the inward spirit whose life has been called into existence by the many schools, colleges, and polytechnic institutions with which our broad land is dotted and which, through the knowledge that they reveal of the forces of nature, enable man to harness the invisible powers and make them obedient to his will. Probably in no way have we shown our aptitude in divining from apparent confusion some fundamental principles and in applying those principles to the commerce and the industry of our country more than in the development of the present meteorological service. Where but a few years ago man thought that chaos reigned supreme we are now, by the aid of simultaneous daily meteorological observations, able to trace out the harmonious relations of many physical laws that were previously but little understood.

DEVELOPMENT OF METEOROLOGICAL SCIENCE

It will be interesting to note that at the time of the founding of the first of the thirteen colonies, at Jamestown, Va., in 1607, practically nothing was known of the properties of the air or of methods for measuring its phenomena. It was not until 1643, twenty-three years after the landing of the Pilgrims on Plymouth Rock, that Torricelli discovered the principle of the barometer and rendered it possible to measure the weight of the superincumbent air at any spot where the wonderful, yet simple, little instrument might be placed. Torricelli's great teacher, Galileo, died without knowing why nature, under certain conditions, abhors a vacuum; but he had discovered the principle of the thermometer. The data from the readings of these two instruments form

* An address presented at the Convention of Weather Bureau Officials, Milwaukee, Wisconsin, August 27–29, 1901.

the foundation of all meteorological science. Their inventors as little appreciated the value of their discoveries as they dreamed of the great western empire which should first use their instruments to measure the inception and development of storms.

About one hundred years after the invention of the barometer, namely, in 1747, Benjamin Franklin, patriot, statesman, diplomat, and scientist, divined that certain storms had a rotary motion and that they progressed in a northeasterly direction. It was prophetic that these ideas should have come to him long before any one had ever prepared charts showing observations simultaneously taken at many stations. But, although his ideas in this respect were more important than his act of drawing the lightning from the clouds and identifying it with the electricity of the laboratory, his contemporaries thought little of his philosophy of storms. It remained for Redfield, Espy, Maury, Loomis, and Abbe, one hundred years later, to gather the data and completely establish the truth of that which the great Franklin had dimly yet wonderfully outlined. Although American scientists were the pioneers in discovering the rotary and progressive character of storms and in demonstrating the practicability of weather services, the United States was the fourth country to give legal autonomy to a weather service; but no one of the other countries had an area of such extent as to render it possible to construct such a broad synoptic picture of air conditions as is necessary in the making of the most useful forecasts. It would require an international service, embracing all the countries of Europe, to equal ours in the extent of area covered.

Congress authorized the first appropriation of $20,000 to inaugurate a tentative weather service in 1870. Gen. Albert J. Myer, to whom was assigned the chiefship of the new meteorological service, doubtless had no conception of the future wonderful extension of the system that he was then authorized to begin. It is comparatively easy, with the great system now at our command and with scientists who have had twenty years' experience in watching the development and progression of storms, to herald to the shipping and other industries of the United States forewarnings of coming atmospheric changes that may be destructive to either life or property. Former Secretary of Agriculture J. Sterling Morton did much to place the meteorological service of the Government on a suitable foundation by having all of its employés and higher officials classified and placed within the civil service. This was essential to the proper performance of the then existing duties of the service. The present Secretary of Agriculture, James Wilson, has continued the merit system in the Weather Bureau, and has greatly improved and extended its operations. Thanks to his policy of development, the Weather Service has had a phenomenal growth during the past four years.

EXPANSE OF ATMOSPHERIC FIELD SURVEYED BY THE FORECASTER

It is a wonderful picture of atmospheric conditions that is presented twice daily to the trained eye of the weather forecaster. It embraces an area extending from the Atlantic to the Pacific, from the north coast of South America over Mexico, the islands of the West Indies and the Bahamas, northward to the uttermost confines of Canadian habitation. It is a panoramic picture of the exact air conditions over this broad area that is twice daily presented to the study of our experts. Hurricanes, cold waves, hot waves, or rainstorms are shown wherever present in this broad area. Their development since last report is noted, and from the knowledge thus

gained their future course and intensity is quite successfully forecast. Every twelve hours the kaleidoscope changes, and a new graphic picture of weather conditions is shown. Nowhere else in the world can meteorologists find such an opportunity to study storms and atmospheric changes.

TANGIBLE RESULTS OF WEATHER BUREAU WORK

Has the Weather Bureau won its way into the hearts and confidence of the American people, and do we feel that the expenditures made for its support are wisely made? Let us answer this question by giving some facts relative to the number of people and industries that are daily in communication with the Bureau. In our Atlantic and Gulf ports, alone, there are floating over $30,000,000 worth of craft on any day of the year; and at every port, whether on the Atlantic, on the Pacific, or on the Lakes, there is either a full meteorological observatory or else a storm-warning displayman who attends to the lighting of the danger lights on the storm-warning towers at night, to the display of danger flags by day, and to the distribution of storm-warning messages among vessel masters. This system is so perfect that the Chief of the Weather Bureau, or the forecaster on duty at the Central office, can dictate a storm warning and feel certain that inside of one hour a copy of the warning will be in the hands of every vessel master in every port of material size in the United States, provided that it is his desire that a complete distribution of the warning be made. As a matter of fact, the storm warnings usually go only to a limited portion of the coast at one time. While the daily predictions of rain or snow, by which, as previously stated, the public measures the value of the weather service, are subject to a considerable element of error, namely about one failure in five predictions, the marine warnings of the service have been so well made that in over six years no protracted storm has reached any point of the United States without the danger warnings being displayed well in advance. As a result of these warnings the loss of life and property has been reduced to a minimum, being doubtless not more than 25 per cent of what it would have been without this extensive system, which comes daily, and almost hourly, into communication with mariners. The public does not appreciate this part of the service that, as a rule, these warnings do not appear in the newspapers because it is not desirable to publish them so far in advance as to unnecessarily hold shipping in port. We only aim to place warnings twelve to sixteen hours in advance of the coming of the storm, and then we communicate by telegraph, by messenger, and by warning lights and flags directly with the masters of vessels. It is a notable example of the utility of the new West Indian weather service, and of the wisdom of Congress in continuing as a perpetual instrument of peace the service organized to meet an emergency of war, that the Galveston hurricane was detected on September 1, at the time of its inception, in the ocean south of Porto Rico, and that the new system of West Indian reports gave us such complete simultaneous data that at no time did we lose track of the storm, and everywhere, as it progressed northward, such full information was given that, notwithstanding the extensive commerce of the Gulf of Mexico, little or no loss of life or property occurred upon the open waters of the Gulf, and the destruction at Galveston was many times less than it would have been without the premonition that was given and the activity of the Bureau's officers in urging the people to move from the low ground of the city to its more secure portions. Again, as this storm recurved and passed over the Lake region, the

storm warnings were so well distributed that, notwithstanding that the energy of the storm was so great that few vessels were stanch enough to live through its fury, shipping remained safely in harbor and there was not a life lost. These are some of the utilities of which the general public is not thoroughly informed.

COLD-WAVE WARNINGS

When a marked cold wave develops in the north plateau of the Rocky Mountains, and, by its broad area and great barometric pressure, threatens to sweep southward and eastward with its icy blasts, the meteorological stations of the Bureau are ordered to take observations every few hours in the region immediately in advance of the cold area, and to telegraph the same to headquarters. By this means every phase of the development of the cold area is carefully watched, and when the danger is great each observatory in the threatened region becomes a distributing center, from which warnings are sent to those who have produce or perishable articles of manufacture that need protection against low temperatures. In such cases the system of distribution is so perfect that it is not uncommon for the Bureau to distribute 100,000 telegrams and messages inside of the space of a few hours, so that nearly every city, village, and hamlet receives the information in time to profit thereby. What this means to the farmer and shipper is well illustrated by the fact that we gathered from those personally interested statements relative to the sweep of one cold wave, which showed that over $3,400,000 worth of property that would have been destroyed by the low temperatures was saved. To be sure, sometimes the surging of the great air eddies which constitute our rainstorms and cold waves—one the low-pressure eddy and the other the high-pressure eddy—deflects the course of the storm or minimizes the degree of cold, and the warnings may partially or wholly fail of verification; but in these important atmospheric disturbances the warnings are justified in such a large proportion of cases that those whose property is at stake do not longer question the utility of the Government service. That no other country brings its citizens into such close touch with its weather conditions is shown by the fact that even when severe storms are not imminent there is, in addition to the printing of the forecasts in the daily press, a daily distribution of 80,000 telegrams, maps, and bulletins, that place the information in the hands of millions whose personal interests are materially affected by the weather.

There are over 2,000 daily papers in the United States, and each one of these prints in a conspicuous place the daily weather predictions. Did it ever occur to you that there is no other information that receives publication and attention by readers each day of the year in every daily paper of the country? There are 47 tri-weekly papers in the United States, 434 semi-weekly, and 14,734 weekly publications, the greater number of which publish the weekly weather crop bulletins of the Bureau for their respective States. Each State forms a section of the national service, and from a central office issues monthly reports on the minute climatology of the State. This climatological data is gathered from standard thermometers and rain gages that are placed in each county. The information finds extensive publication also in the weekly and monthly periodicals.

VALUE OF THE WEATHER SERVICE TO RURAL INDUSTRIES

Few people realize what a complete system the Weather Bureau forms for the accurate and rapid collection and dissemination of crop information. It has 1,200 paid and skillfully trained officials outside of Washington, who are

quite evenly distributed over the continent and its island possessions, and who are available to report on any matters concerning weather, crops, climate, or statistics. It has 200 officials and employés at the central office in Washington. It has 180 fully equipped meteorological stations quite equidistantly scattered over the United States and its dependencies, each manned by from one to ten trained officials, which stations are not only weather observatories, but are centers for the gathering of statistical and climate and crop reports. It has a central observatory in each State and Territory to which all subordinate offices in the State report and to which all voluntary weather and crop observers report. These central observatories are equipped with printers, printing plants, trained meteorologists and crop writers, clerks, and messengers. During the past fifteen years the work of the substations and voluntary crop and weather observers has been so systematized under the State central offices that these centers constitute the most efficient means for the accurate and rapid gathering, collation, and dissemination of statistical and climate and crop information. The State central offices are under the systematic direction of the central office in Washington. The central office at Washington is equipped with cartographers, printers, pressmen, lithographers, and elaborate addressing and mailing appliances for the printing and mailing of large quantities of national weekly, monthly, quarterly, or annual reports and bulletins. The telegraph circuits of the Weather Bureau are ingeniously devised for the rapid collection, twice daily, of meteorological reports; they are also used to collect the weekly national crop bulletin. The Weather Bureau has 315 paid temperature and rainfall reporters who are now daily telegraphing their data from the growing fields to certain cotton, corn, and wheat centers. The Bureau has 250 storm-warning displaymen distributed among the ports along the Atlantic, Gulf, and Pacific coasts and in the Lake region. The Bureau has an observer serving each morning on the floor of each important board of trade, commercial association, or cotton or maritime exchange in the country, who displays weather and crop information and each day charts the weather reports on a large map. The Weather Bureau has 3,000 voluntary observers—nearly one for each county in the United States—equipped with standard thermometers, instrument shelters, and rain gages, who have for years intelligently served the Government by taking daily weather observations and rendering weekly crop reports to State central offices. There are 14,000 persons reporting weekly to the climate and crop centers on the effect of weather upon the crops in their respective localities. These voluntary crop correspondents could quickly be increased in number to several hundred thousand if occasion required. In one month of four weeks there are printed and distributed 168 different State crop bulletins, four national crop bulletins, and 42 monthly eight-page State climate and crop bulletins. The weekly State crop bulletins are written by the directors of the different State sections, and the weekly national crop bulletin by Mr. James Berry, Chief of the Climate and Crop Division of the Weather Bureau, a man who has had many years experience as a writer on crop conditions in the United States.

BENEFITS TO FRUIT AND SUGAR GROWERS

The utilities of the weather service are well illustrated by the benefits that the fruit interests of California derive from the rain warnings, which, on account of the peculiar topography of that region, are made with a high degree of accuracy but a few hours before the

coming of the rain, yet far enough in advance to enable the owners of vineyards, most of which are connected by telephones, to gather and stack their trays, and thus save the drying raisins from destruction. Along the Rocky Mountain plateau and the eastern slope our stations are so numerous and our system of distribution so perfect that the sweep of every cold wave is heralded to every ranch that has telegraphic communication. In the cranberry marshes of Wisconsin the flood-gates are regulated by the frost warnings of the Bureau, and where formerly a profitable crop was secured only once in several years, it is now a rare exception that damage occurs. As we go farther south and east into the Gulf and South Atlantic States, our frost warnings are made with a greater degree of accuracy than in any other part of the country. We find the growers of sugar cane in Louisiana, the truck-growers from Norfolk south to Jacksonville, and the orange-growers of Florida timing their operations by the frost warnings of the Bureau. From the estimates of these people it is indicated that the amount annually saved to them is far greater than that expended for the support of the entire Department.

FLOOD WARNINGS

No less valuable is the flood-warning service which is in operation along our large river courses. So much advance has been made in forecasting flood stages that it is now possible to foretell three to five days in advance the height of navigable rivers at a given point to within a few inches. The danger line at every city has been accurately determined and charted, so that when a flood is likely to exceed the danger limit residents of low districts and merchants having goods stored in cellars are notified to move their property out of reach of the rising waters. An illustration of the efficiency of this system was shown during the great flood of 1897. Throughout nearly the whole area that was submerged the warning bulletins preceded the flood by several days, and the statisticians of the Government estimate that $15,000,000 worth of live stock and movable property was removed to high ground as the result of the forewarnings. These warnings are distributed from fifteen river centers, at each of which a trained forecaster is located who daily is in possession of such measurements of precipitation on watersheds and such up-river water stages as are necessary to enable him to make an intelligent prediction for his own district. On account of the recent disasters from floods in the rivers of Texas steps are now being taken to establish a flood-warning service specially for that State.

Measurements of snowfall in the high mountain ridges of Montana, Wyoming, Idaho, Utah, Arizona, and New Mexico during the past several years have given us information that now enables us to make a very accurate estimate in the spring as to the supply of water from this source that can be expected during the growing season. In this way the weather service has been brought into close contact with those interested in irrigation, becoming a valuable aid to them.

The heavy responsibility that rests upon the Weather Bureau in the making of storm warnings is gathered from the statement that 5,628 transatlantic steamers and 5,842 transatlantic sailing craft enter and leave ports on the Atlantic seaboard during a single year. The value of their cargoes is more than $1,500,000,000. Our coastwise traffic is also enormous. In one year more than 17,000 sailing vessels and 4,000 steamers enter and leave port between Maine and Florida. Their cargoes are estimated to be worth $7,000,000. From these facts one can readily measure the value of the marine property that the Department of Agriculture, through the

Weather Bureau, aims to protect by giving warning of approaching storms.

The climatology of each State is now so well determined and the information is so systematically collated as to be drawn upon daily by thousands of those engaged in public enterprises, such as the building of water works, where it is essential to know the precipitation on given watersheds; the building of culverts, where the extremes of rainfall within short periods must be known; the building of great iron or steel structures, where the expansion and contraction of metal with changes of temperature must be accounted for; the speculation in land in regions that are not known to the purchaser, and the selection of residences for health and pleasure.

It is not generally known that the meteorological records daily appear in numerous of the courts of the land, and that many important cases at law are settled or greatly influenced by them.

Under the direction of Secretary Wilson, we have recently arranged with Europe and the Azore Islands for the receipt of meteorological reports that, in connection with our present extensive system, enable us to forecast wind direction and wind force for transatlantic steamers for a period of three days out from each continent. This is an extension of the meteorological service that has long been sought by mariners. The new German cable from Lisbon to New York enables us to get direct communication with several islands, the reports from which are necessary in the taking up of this new and important work.

Recently the Post Office Department, through its rural mail delivery, has placed at the disposal of the Weather Service one of the most efficient means of bringing its daily forecasts, frost and cold-wave warnings to the very doors of those who can make the most profitable use of them. The latest forecast of the weather is printed on small slips of paper, and each carrier is given a number equal to the number of houses on his rural route. Thus does the meteorological service insinuate itself into every avenue that promises efficient dissemination of its reports. To be forewarned is to be forearmed. The last appropriation for the support of the Weather Bureau was $1,058,320. It is the opinion of many insurance and other experts that the meteorological service of the United States Government is worth over $20,000,000 annually to the agriculture, the commerce, and the industry of the country, and this notwithstanding the large element of error that must for a long time to come enter into its predictions.

It may be asked what are the prospects for an improvement in the accuracy of the weather forecasts during the coming century. To this it may be answered that when our extensive system of daily observations has been continued for another generation or two a Kepler or a Newton may discover such fundamental principles underlying weather changes as will make it possible to foretell the character of coming seasons. If this discovery be ever made it will doubtless be accomplished as the result of a comprehensive study of meteorological data of long periods covering some great area like the United States. While we cannot make such prediction today, we feel that we are laying the foundation of a system that will adorn the civilization of future generations. At the present time I know of no scientific man who essays to make long-range predictions, and in closing this paper I would especially caution the public against the imposture of charlatans and astrologists who simply prey upon the credulity of the people. I believe it to be impossible for any one to make a forecast based upon any principles of physics or upon any empiric rule in meteorolgy for weeks

and months in advance. The Weather Bureau takes the public into confidence in this matter, and does not claim to be able to do more than it is possible to accomplish.

It is to be regretted that the American press, the ablest and the most heroically honest of any in the world, does in many cases not only print the twaddle of long-range weather forecasting frauds, but actually pays for the privilege. A large number of our rural press is imposed upon by these forecasts, and in publishing them become the disseminators of gross error instead of enlightenment.

WORK OF THE BUREAU OF AMERICAN ETHNOLOGY*

BY W J MCGEE, ETHNOLOGIST IN CHARGE

THE Bureau of American Ethnology was created to make scientific researches among the American aborigines. The work is conducted under the direction of the Smithsonian Institution, but the Bureau is maintained wholly through appropriations by the United States Government.

The office was instituted in 1879, primarily for the purpose of classifying the native tribes in such manner as to guide Federal and State officers in grouping them on reservations; and accordingly the earlier researches were confined to the territory of the United States. As the work progressed, it was found necessary to investigate the relations between the tribes of this territory and those of neighboring countries; and soon after the institution of the Bureau the inquiries were extended over the entire continent, and the appropriations were made for continuing researches in "North American Ethnology." Still later it was found that the ethnologic problems of North America are inseparable from those of the Antilles and South America; and about 1895 the field of research was still further extended, and the appropriations are now made for "American Ethnology." Accordingly the present field of the Bureau may be defined as the Western Hemisphere.

The special researches among the aboriginal tribes are necessarily confined largely to districts still occupied by the tribesmen (though attention is constantly given to aboriginal relics and works in districts now occupied by whites); and the extent of the operations is limited by the annual appropriations. During the past three years field work has been conducted in about one-third of the Federal States and Territories, while regular or special collaborators have operated in New Brunswick, Nova Scotia, British Columbia, along the Alaskan frontier, and on the western coast of Greenland, as well as in several Mexican and Central American States—Argentina and Chile. The work is seldom of such character as to involve surveying or original mapping; but extensive ethnologic collections are made, partly to facilitate research and partly to illustrate its results. The collections are preserved in the United States National Museum.

Designed primarily to develop a practical classification of the native tribes, the

* Reprinted from "Verhandlungen Des VII. Internationalen Geographen-Kongresses in Berlin," 1899.

earlier studies were necessarily devoted to tribal characteristics rather than racial features; and as the studies proceeded these characteristics were analyzed and defined in such manner as to yield a comprehensive tribal classification on a new basis. In its essential features the classification is, in the first place, dynamic in that it rests on the activities of men rather than on organic forms and structures; in the second place, it is demotic in that it rests on collective attributes (or on attributes of men considered as constituents of tribes or other assemblages) rather than on merely biotic structures and functions. In other words, the pressing need for a practical classification of the American aborigines compelled the abandonment of the taxonomy borrowed from biology, and led to the development of a distinctively anthropologic classification, the units of which are human groups.

The recognition of the activities as essential characteristics of tribes and peoples leads to analysis of the activities displayed by individuals and groups; and, with the advance of knowledge up to the present writing, the activities have been arranged in categories which seem to be natural and convenient: (1) the simplest activities are in large part initially spontaneous expressions of hereditary faculty, and may be classed as esthetic; (2) next follow the activities reflecting the interrelations between the individual and group (*somatikos* and *demos*) and their environment, which may be classed as industrial; (3) then follow the activities and superorganic (or institutional) structures reflecting the interrelations among individuals and groups, which may be classed as social; (4) the simpler activities, which are measurably shared by lower organisms, give shape to a series of distinctively human activities, constantly exercised in maintaining and extending demotic relation, which may be classed as linguistic; and (5) the several activities of lower order produce a series expressing the sum of human interrelations (comprising knowledge and pseudo-knowledge in all aspects), which may be classed as sophiologic. The work of the Bureau is organized on lines defined by these normal categories of activities—*i. e.*, the researches pertain to (1) Esthetology, (2) Technology, (3) Sociology, (4) Philology, and (5) Sophiology, respectively. It is held that this classification of anthropology places the Science of Man on the high plane occupied by other sciences in their modern or dynamic aspects—*i. e.*, in those aspects in which action and sequence are conspicuous and characteristic.

Definition of the activities renders it possible to classify tribes and peoples in terms of activital condition or culture, and eventually to trace the course of human development. The culture grades may be expressed vaguely in terms of esthetic development, a little more clearly in terms of industrial development, or much more definitely in terms of institutional development; and a practical seriation of the course of human development has been based on the researches among the American aborigines and other known peoples. The stages are (1) savagery, characterized by consanguineal organization through the maternal line, (2) barbarism, characterized by consanguineal organization through the paternal line, (3) civilization, characterized by organization on a territorial basis, and (4) enlightenment, characterized by organization on a basis of intellectual rights. The culture grades might be expressed still more trenchantly in terms of linguistic development, and most trenchantly of all in terms of sophiologic development, were the data sufficient; and indeed the practical classification of the aboriginal tribes of America rests on the linguistic basis. The linguistic activities were adopted as criteria for the classification, partly because of the persistence and exoteric character (and hence the ready obtainability) of language, partly be-

cause language is the key to all other activities; and the wisdom of the choice was soon demonstrated by practical application of the classification—for it was found that tribes speaking related languages were so nearly alike in arts, industries, social organization, and belief as to live together in harmony, while, if their languages were unlike, their other activities, especially their beliefs, were so incongruous as to prevent harmonious association.

Under the linguistic classification, the aborigines of America north of northern-central Mexico were classified, early in the present decade, in about seven hundred and sixty tribes, grouped in sixty stocks; and the later researches have served to establish and somewhat to extend this classification.

The discrimination of the tribes and the linguistic stocks to which they may be assigned has afforded means for tracing the history and elucidating the movements of the aborigines with considerable success; and this phase of the work has received especial attention during the last two years. The most instructive example is afforded by the tribes of the Siouan stocks: Gathering on the southern Atlantic coast probably three to five centuries before Columbus, the parent tribes drifted northward along the coast, and spread slowly inland; leaving the main coast along the middle Atlantic estuaries, they followed Chesapeake and other bays into the interior, gradually abandoning piscatory habits, and developing agriculture in connection with the chase; the inland invasion brought them in contact with the buffalo, and a considerable part of the people followed this easy game westward across the Appalachian mountains, and down the westward-flowing rivers to the Mississippi, whence they spread still farther westward, becoming the buffalo Indians par excellence of the northern plains. Meantime they increased, both by normal growth and by the absorption of weaker tribes and tribal remnants; they spread over an area several of hundred thousand square miles, and developed a number of tribal federations, the most noted being the Dakota confederacy of six or seven great tribes. Quite similar appears to have been the growth of the Algonquian-speaking peoples, who occupied the Atlantic coast north of the Siouan tribes, and pushed inland along various rivers from the Susquehanna to the St. Lawrence, and drifted thence westward along the Great Lakes and over the plains adjacent, displacing or absorbing alien tribes, and forming various confederacies as they spread over the vast interior territory. Similar, too, save in extent of migration, was the growth of the Iroquois confederacy which, within the period of three to five centuries terminated by white settlement, pursued a career of assimilation in which they extended territorial holding, absorbed a large but unknown number of inimical tribes, pressed hard against neighboring Siouan and Algonquian peoples, and developed one of the best organized and best known of the native American confederacies, the famous Iroquois League. These examples illustrate the demotic development and geographic history of the aborigines of eastern America; a growth and history which may be summed in the statement that the greater peoples represented by the principal linguistic stocks appear to have originated on the coast and spread inland, acquiring a crude agriculture, creating elaborate social institutions, and developing intelligence to a degree corresponding to the esthetic and industrial and social growth.

Quite different are the conditions on the Pacific coast, where nine-tenths of the aboriginal linguistic stocks are concentrated in one-tenth of the area; here the peoples are subsedentary (or limited in range), generally of restricted social organization, and of specialized or localized industries and arts, while the intelligence is of correspondingly

low order. When the Pacific coast aborigines are compared with those of the Atlantic coast and the interior, they are found notably more primitive in activital development; their activities were autochthonal and narrow, while those of their eastern contemporaries were broadly provincial; and in most other respects they occupied a far lower cultural plane than that of the vigorous Algonquian and Iroquoian and Siouan peoples of the eastern plains and shores. It is significant, too, that the prehistoric relics of the Atlantic coast are much more abundant and seem to attest a longer and more varied occupancy than the corresponding relics of the Pacific belt. Briefly, the researches concerning movements of tribes and peoples show that the American aborigines cannot be treated as a unit in the study of migrations, or of the peopling of the various parts of the continent; at the same time they have thrown much light on the actual lines of development and movement of the aborigines during the centuries preceding the discovery by Columbus.

The definition of the culture stages and the recognition of the lines of growth and migration of tribes and confederacies throws some light on the question as to the origin of the aborigines, and removes the inquiry from the domain of pure speculation. Summarily it may be noted, first, that the various lines of activital development are convergent, and, second, that the history of every known tribe or confederacy is a record of interclan or intertribal blending and union. Accordingly, the course of aboriginal development in America during prehistoric times can be pictured only by a series of convergent and interblending lines, coming up from a large but unknown number of original sources scattered along the various coasts of the continent.

It has not yet been found possible to reduce the period of aboriginal occupancy of the Western Hemisphere either to the accepted units of chronology or to the time-scale of geology. Various observers have reported human relics from different geologic deposits ranging in age from Miocene to late Pleistocene; but the more critical researches of the Bureau (conducted partly in coöperation with the United States Geological Survey) have shown that the evidence of association is manifestly erroneous in nearly all cases, and inconclusive in all. The latest special researches relating to the antiquity of man were conducted in the autumn of 1898, in the gold belt and Table-mountain zone of California, whence various human relics have been reported from Tertiary formations; the inquiries only served to reveal the various sources of error by which the original observers were not unnaturally misled. The chronologic inquiries indicate occupancy of various districts several centuries before the coming of white men, but there is nothing to indicate, with any strong degree of probability, an occupancy of more than fifty or sixty centuries—the body of phenomena indicating a much briefer period of habitation than that attested by the more abundant and varied relics of the Eurasian continent. In brief, there is no unmistakable indication of human occupancy of the Western Hemisphere during any of the geologic periods as commonly defined, nor more than a very few millenniums before the landing of Columbus.

During the year (1898) the collaborators of the Bureau of American Ethnology, with several other American anthropologists, have found it convenient to apply a distinctive term to the aborigines of the American hemisphere, viz., *Amerind*. The term is susceptible of use in different grammatic forms, and does not involve confusion with the modern population of Caucasian derivation. It is applied collectively to the several aboriginal tribes and tribesmen of the American hemisphere, including the Eskimo.

BOUNDARIES OF TERRITORIAL ACQUISITIONS

THE Report of "a conference upon the boundaries of the successive acquisitions of territory by the United States" has been published by the Census Bureau.* The conference was appointed, at the request of the Census Office, as an advisory committee, in the hope that certain discrepancies between different branches of the Government might be harmonized. The main conclusions of the conference are summarized by the chairman, Walter F. Wilcox, as follows:

"1. The region between the Mississippi River and Lakes Maurepas and Pontchartrain to the west and the Perdido River to the east should not be assigned either to the Louisiana Purchase or to the Florida Purchase, but marked with a legend indicating that title to it between 1803 and 1819 was in dispute.

"2. The line between the Mississippi River and the Lake of the Woods, separating the territory of the United States prior to 1803 from the Louisiana Purchase, should be drawn from the most northwestern point of the Lake of the Woods to the nearest point on the Mississippi River, in Lake Bemidji.

"3. The western boundary of the Louisiana Purchase between 49° and 42° north followed the watershed of the Rocky Mountains; thence it ran east along the parallel of 42° north to a point due north of the source of the Arkansas River, and thence south to that source.

"4. The northwestern boundary of Texas as annexed extended up the principal stream of the Rio Grande to its source and thence due north to the parallel of 42° north.

"5. The southern boundary of the Mexican Cession of 1848 should be drawn from a point on the Rio Grande eight miles north of Paso, instead of from one about 30 miles farther north, as is the usual practice at present, west three degrees, and thence north to the first branch of the Gila River."

The conference report was signed by Walter F. Wilcox, representing the Census Office; Andrew H. Allen, representing the Department of State; O. H. Tittmann, representing the Coast and Geodetic Survey; Henry Gannett, representing the Geological Survey, and P. Lee Phillips, representing the Library of Congress. The findings of the conference have no official standing, but are entitled to great weight, owing to the distinguished names signing the report.

The territorial acquisitions concerning the boundaries of which discrepancies had been noted were considered by the conference in chronological order.

THE LOUISIANA PURCHASE

The Louisiana Purchase was thus first considered, and the situation discovered was, briefly, that the territory came into the possession of the United States through the Treaty of 1803 with France, having the same extent as when ceded by France to Spain in 1763, and as when retroceded to France by Spain by the Treaty of San Ildefonso, of October 1, 1800. To ascertain the extent of this territory eastward, the conference examined the several well-known authorities upon the early history of Louisiana—Marbois, Ellicott, Gayarré, Darby, Stoddard, and others; the treaties involved; letters of Monroe, Jefferson, and Talleyrand; certain maps; the text of the grant to Crozat by Louis XIV, in 1712; the presentation of the case by the Commissioner of the General Land Office in his volume entitled "The Louisiana Purchase;" etc. This examina-

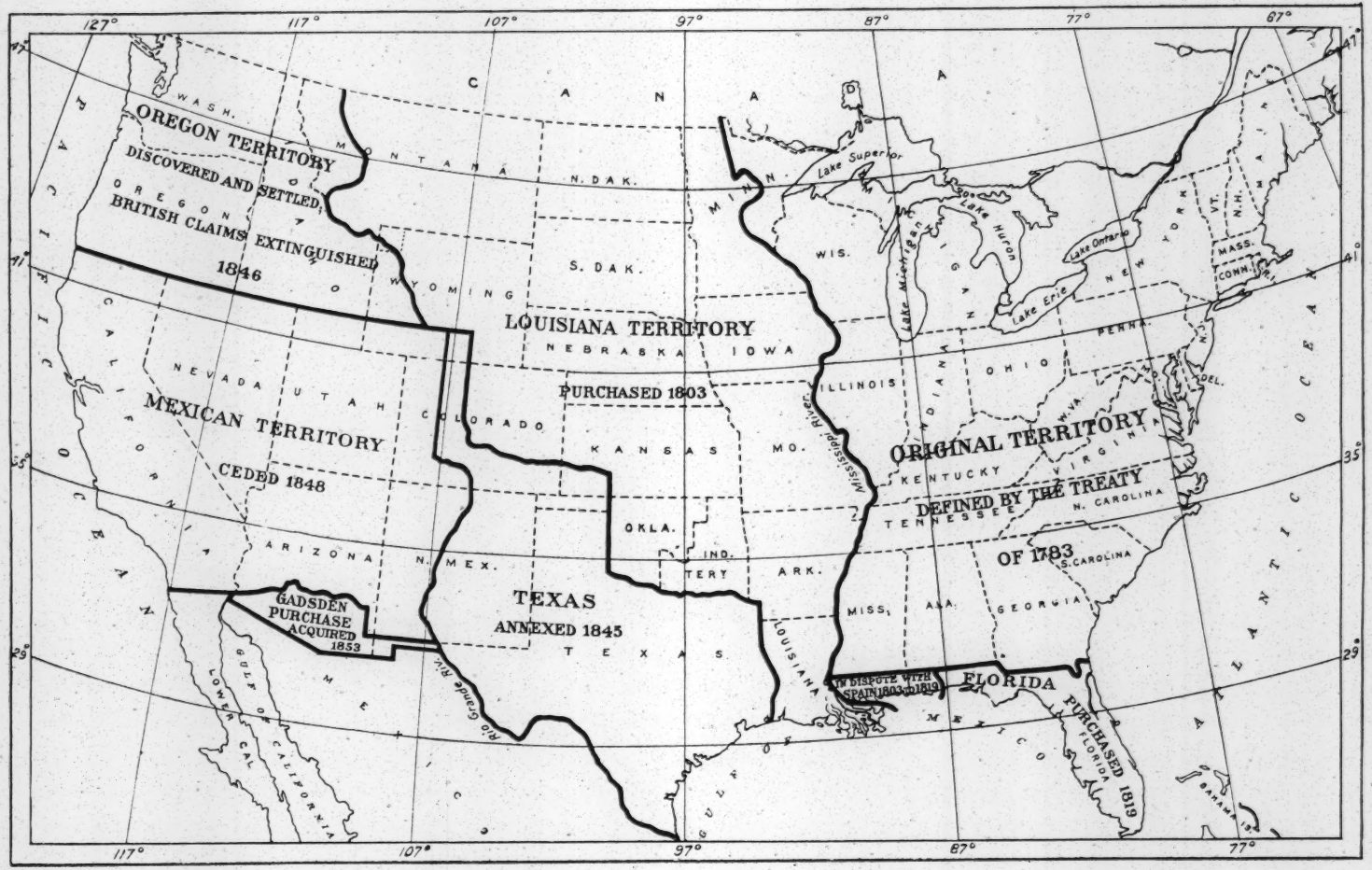
*Census Bulletin No. 74.

tion failed, however, to enable the conference to determine the dispute about the territory between the Mississippi and Perdido Rivers, claimed alike by Spain and France, and afterwards by the United States, and finally released by Spain in the Treaty of 1819, in language assigning no limits to West Florida. The conference concluded that the boundary line of this territory at the Mississippi River, as claimed by Spain, should be so defined by a legend on the map, and that the boundary line at the Perdido River, as claimed by the United States, should be similarly indicated. This conclusion was reached with an understanding or admission of the following facts touching the territory between the two rivers claimed by Spain as a part of West Florida: That the territory of Louisiana, as described by France and granted to Crozat by Louis XIV, extended on the east to the River Mobile, which, with the port, was ceded specifically by France to England by the Treaty of Paris in 1763, Spain at the same time ceding the Floridas to Great Britain, with St. Augustine and the bay of Pensacola—thus, inferentially at least, determining the respective boundaries of Louisiana and West Florida; that the first occupation of the interior of the territory between the Rivers Mississippi and Perdido by the Spaniards was during the war of the American Revolution, when it belonged to Great Britain; that Great Britain retroceded the Floridas to Spain in 1783, at which time the Louisiana territory belonged to Spain by the French cession in the preliminaries of peace of 1762 (confirmed in 1763), whereby "all the country known under the name of Louisiana" was transferred; that Spain in 1800 retroceded Louisiana to France as it was received from France in 1763; that France in 1803 ceded the territory of Louisiana to the United States, as discovered and held by France, ceded to Spain, and retroceded to France; and, finally, that in 1819 Spain ceded to the United States all the territory held or claimed by His Catholic Majesty under the names of East and West Florida. In addition to the grounds of dispute between France and Spain, and the United States and Spain, here shown, there was a conflicting claim concerning the extent of West Florida, born of the contention between French and Spanish discoverers and settlers in the sixteenth and seventeenth centuries; and there was also the claim of the French, by right of La Salle's descent of the Mississippi in 1682, to "all the country drained by that river."

With reference to the Louisiana boundary, there remained but one point of difference between the maps under consideration. Article II of the definitive Treaty of Peace of 1783 between the United States and Great Britain, after defining the northern boundary to the Lake of the Woods, continues as follows: " . . . Thence through the said lake to the most northwestern point thereof, and from thence on a due west course to the River Mississippi." Such a line as that described being obviously impossible, the Mississippi River being south not west of the Lake of the Woods, the line drawn by the conference was a line from the most northwestern point of that lake to the nearest point on the Mississippi. This line the conference regarded as justified by rules of international law and practice respecting vaguely described boundaries in such topographical circumstances.

THE OREGON TERRITORY

The Oregon Territory was the next subject to receive the attention of the conference. There seemed to be nothing in the history of that part of our possessions to warrant mention of the claim of Spain rather than that of Great Britain, and the final settlement of the question of sovereignty and boundaries by the Treaty of 1846, fixing the 49th parallel, "by an amicable compromise,"



OREGON TERRITORY
DISCOVERED AND SETTLED,
BRITISH CLAIMS EXTINGUISHED
1846
MEXICAN TERRITORY
CEDED 1848
GADSDEN
PURCHASE
ACQUIRED
1853
LOUISIANA TERRITORY
PURCHASED 1803
TEXAS
ANNEXED 1845
ORIGINAL TERRITORY
DEFINED BY THE TREATY
OF 1783
FLORIDA
PURCHASED 1819
IN DISPUTE WITH
SPAIN 1803 TO 1819
CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Mississippi River
Rio Grande Riv.
WASH.
MONTANA
N. DAK.
MINN.
WIS.
MICHIGAN
NEW YORK
VT.
N.H.
MAINE
MASS.
CONN.
R.I.
S. DAK.
WYOMING
NEBRASKA
IOWA
ILLINOIS
INDIANA
OHIO
PENNA.
N.J.
DEL.
W.VA.
VIRGINIA
KENTUCKY
TENNESSEE
N. CAROLINA
S. CAROLINA
GEORGIA
ALA.
MISS.
LOUISIANA
ARK.
MO.
KANSAS
OKLA.
IND.
TERY
TEXAS
N. MEX.
ARIZONA
COLORADO
UTAH
NEVADA
CALIFORNIA
LOWER CAL.
GULF OF CALIFORNIA
MEXICO
BAHAMA IS.
127°
117°
107°
97°
87°
77°
67°
47°
41°
35°
29°

as the northern boundary west of the Rocky Mountains, seemed to be a recognition by the United States of the importance of the British pretensions sufficient to warrant mention on the map. The Treaty of 1819 (the Florida Cession) had already served as a conclusive relinquishment by Spain of any claim in this quarter. Therefore the conference, considering these facts, together with the historical narrative of discoveries and occupations on the northwest coast of America by both Spanish and British explorers and adventurers, and the part played by traders, explorers, and settlers from the United States within the territory known under the name of Oregon in the eighteenth century, determined to place as a legend on the face of the map, to describe briefly and with historical accuracy the area in question, the following words: Oregon Territory discovered and settled; British claim extinguished, 1846.

TEXAS

Texas was next in order for discussion and determination, and the conference decided, almost without debate, that the northwestern boundary of that territory, as admitted to statehood in the Union, should be that defined on the map of the General Land Office—the line there shown coinciding closely with the line on the Disturnell "Map of the United Mexican States," 1847, filed with the Treaty of 1848 as a part of that convention.

THE FIRST MEXICAN CESSION

The southern boundary of the United States west of the Rio Grande, 1848, was determined in the same manner but with a different result, the line adopted being that indicated on the Disturnell map, according to the conference's interpretation of that chart. The facts are adequately stated by Major Emory at page 16 of his Report on the United States and Mexican Boundary Survey, volume 1, as follows:

"It is proper for me, however, before closing this chapter, to refer to a publication issued by Mr. J. R. Bartlett, one of the late commissioners on the part of the United States, which professes to give an accurate account of the affairs of the commission. It is not my purpose to review that work, and expose its errors, but simply to correct some statements affecting myself.

"Mr. Bartlett's principal achievement on the boundary was the agreement with General Conde, the Mexican commissioner, fixing the initial point on the Rio Bravo (*i. e.*, Rio Grande), in the parallel of 32° 22′, instead of a point as laid down on the treaty map, about eight miles above El Paso, which would have brought it to the parallel of 31° 52′. That agreement is no less remarkable than the adroitness and success with which Mr. Bartlett convinced the authorities at Washington of its correctness.

"The question has been so thoroughly discussed that a reproduction of it is not called for. It is sufficient to say here that it was disapproved by the astronomer and surveyor on the commission at the time, and was finally repudiated by the Government.

". . . My signature as surveyor was only required, as alleged, to perfect the official documents; the words of the order were: 'You will sign the map of the initial point agreed upon by the two commissioners.'

"By reference to the treaty it will be seen that any agreement of the kind required the action of the joint commission, and that the joint commission was to be composed not only of the two commissioners, but of the two surveyors also.

"I refused to recognize the act as that of the joint commission, and signed the map as the order directed, carefully and studiously attaching a

certificate that it was the initial point of the two commissioners; and to prevent the possibility of misconstruction, an agreement in writing was entered into with Mr. Salazar, and our signatures attested by witnesses, showing that the map was only that of the boundary agreed upon by the two commissioners, and nothing else.

"This course, while it permitted me to obey a specific order in writing from a superior, left the Government free to act, and repudiate the agreement by the two commissioners, as it subsequently did."

As the line on the Disturnell map delimiting the southern boundary of the United States under the Treaty of 1848 is identical with the northern boundary of the territory purchased in 1853, the conference next arrived at the point of considering

THE GADSDEN PURCHASE

An examination of the treaties, of the report of Major W. H. Emory, already referred to and quoted, and other evidence, together with a study of the treaty map, developed the fact that the repudiated line agreed to by one of the United States commissioners, Mr. J. R. Bartlett, and the Mexican commissioner, General Conde, seems to have been adopted by the General Land Office, though after having been run only one and one-half degrees west from the point of beginning, about 38 miles north of Paso, the survey was abandoned and the line repudiated by the Government of the United States. The line indicated by the treaty or Disturnell map begins at a point about eight miles north of Paso or El Paso, runs west three degrees on a parallel, and thence north on a meridian to the first branch of the Gila River. This line was adopted by the conference as the eastern part of the northern boundary of the Gadsden Purchase. The conclusion was reached after consideration of Mr. Bartlett's claims, Major Emory's report, the action of the Government, and the treaty map.

THE GERMAN SOUTH POLAR EXPEDITION

By Dr. Georg Kollm, Editor and Secretary of the Geographical Society at Berlin

THE object of the German Antarctic expedition is the scientific exploration of the South Polar regions, particularly on its Indo-Atlantic side.

In pursuance of this object, it left Germany on the 11th of August, 1901, and is proceeding to Three Island Harbor, Royal Sound, in the Kerguelen Islands, where a base station will be established. In December, 1901, it is expected that the expedition will be ready for its real work of exploration and will push on toward the south as far as practicable. Should land be reached, a station will be founded and maintained for a year and the ship wintered there. Whether any later attempt to push still farther south will be made is not yet determined. It will not, at all events, be undertaken unless the conditions should prove particularly favorable.

The expedition has general orders to remain until its tasks are satisfactorily executed, but in any case not to remain beyond June, 1904, at which date it must report at some harbor in communication with home. Should no news

be received of the expedition by the first of June of that year, it will be in order to consider the expediency of fitting out a relief ship.

The leader of the expedition, Dr. Erich von Drygalski, of Berlin, was appointed by His Majesty the Emperor, and has thoroughly studied the problems of South Polar regions. He has been placed in absolute control of the South Polar ship *Gauss*, its personnel and equipment. All the arrangements for the work to be carried on from the time the ship left Germany are under his direction and subject entirely to his control. Marine laws regulate the position of the ship's company toward its leader.

The expedition is an undertaking of the German Empire, and is fitted out through the Secretary of State for the Interior, Herr Dr. Graf von Posadowsky-Wehner. It sails under the Imperial Service flag, and its officers and men bear special service designations authorized from the highest quarters. It is thoroughly well equipped, both scientifically and practically, for its ($10,000) mission. In addition to the funds provided by the Empire, about 40,000 marks in small amounts have been contributed by private societies. The interest aroused in the expedition throughout the Empire has been very great, and has led to the presentation of many valuable gifts and offerings which will add much to the efficiency of the equipment.

All the members of the expedition will be paid their regular and special remuneration from the imperial funds. They are also well insured against accidents and diseases caused by the climate. Risks too great for ordinary marine insurance companies to assume are borne by the Empire.

The results of the expedition and the collections made by it will be the property of the Empire, which will assume charge of their disposal. The scientific members of the expedition will be employed in the arrangement of the collections in such manner as their usefulness on the expedition warrants. They have to address all their suggestions and desires to the leader of the expedition, who will make all further arrangements.

The personnel of the expedition, beside the leader, who will conduct the oceanographical and geodetic work, are as follows:

a. The scientific members: Prof. Dr. E. Vanhoffen, Kiel, for zoölogy and botany; Dr. H. Gazert, Munich, physician and bacteriologist; Dr. E. Philippi, Breslau, for geology and chemistry; Dr. F. Bidlingmaier, Lauffen, for earth-magnetism and meteorology.

b. The commander of the *Gauss*, a captain of the Hamburg-American line, Hans Ruser, from Hamburg, who was selected with the permission of His Majesty the Emperor.

c. The ship's officers: W. Lerche, from Stettin, first officer; R. Vahsel, from Hanover, second officer, both from the Hamburg-American line; L. Ott, from Hochst, second officer; A. Stehr, from Hamburg, first engineer.

d. The crew of the *Gauss*, which consists of two assistant engineers, two machinists, two boatmen, one Norwegian pilot, one cook, one steward, 6 seamen, and five stokers—in all, 20 men.

e. The personnel selected for the Kerguelen station consists of Dr. E. Werth, from Munster, as biologist; Dr. K. Luyken, from Munich, as meteorologist, and two seamen.

The Kerguelen station is chiefly intended for magnetic and meteorological observations, which, as well as similar work conducted by the German Chief expedition, will be carried on in accordance with the international program agreed on with England. This program has been sent to all States having magnetic-meteorological stations, as well as to the stations themselves, with the request for coöperation. Many have already signified their readiness to do so.

It will also be followed at the station established by the Argentine Republic on Staten Island. Coöperation in all other sciences with the English expedition and all other expeditions to be sent out by other States has been regulated in the best manner by the division into spheres of work.

NATIONAL GEOGRAPHIC SOCIETY CALENDAR, 1901-1902

AT a meeting of the Board of Managers, held on September 28, the Lecture Committee reported an attractive provisional program for the season of 1901-1902. It provides for continuing the three classes of meetings, viz: Technical Meetings, to be held in the Assembly Hall of Cosmos Club; Popular Lectures, to be delivered in the First Congregational Church, and Afternoon Lectures, to be delivered in Columbia Theater.

A program for the earlier part of the season will be issued to members about October 10.

Subject to transposition in dates, the calendar proposed for November and December is as follows:

November 1.—Technical Meeting: Symposium on the Growth and Prospects of the Society; President Graham Bell, followed by Prof. Angelo Heilprin and others.

November 8.—Popular Meeting: Nearest Lands to the Pole; H. L. Bridgman, Vice-President, Arctic Club.

November 15.—Technical Meeting: The Lost Boundary of Texas; Marcus Baker, Cartographer U. S. Geological Survey.

November 22.—Popular Meeting: Interior Borneo; Dr. A. C. Haddon, of Oxford, England.

November 29.—Technical Meeting: Subjects to be announced later.

December 6.—Popular Meeting: A Winter in Ellesmereland; Dr. Robert Stein.

December 13.—Technical Meeting: Subjects to be announced later.

December 20.—Popular Meeting: A Half-century's Immigration; Hon. E. F. McSweeney, Assistant Commissioner of Immigration.

December 27.—Holiday vacation.

Lectures in contemplation for later Popular Meetings are: Conditions and Prospects in the Philippines, by Gen. A. W. Greely; The Trans-Siberian Railway, by Hon. Ebenezer J. Hill; Cliff Dwellings of Mesa Verde, by Mrs. John Hays Hammond; The Appalachian Forest Reserve, by Hon. James Wilson, Secretary of Agriculture; The Chinese Problem; Sweden Today, by William Eleroy Curtis; The Nicaraguan Canal; The Great Pyramid, by Prof. W. Edwin Priest; Colombia; Pacific Cables, Actual and Proposed; The Danish Islands; Japanese Art and Literature, together with other topics rendered timely by circumstances.

The general subject for the Afternoon, or Lenten, Lectures is "Problems of the Pacific." The dates and special topics proposed are:

Wednesday, February 19.—Japan.

Wednesday, February 26.—Hawaii.

Wednesday, March 5.—Polynesia.

Wednesday, March 12.—Australia and New Zealand.

Wednesday, March 19.—Physical Features of the Great Oceanic Basin.

Wednesday, March 26.—The Pacific as a Factor in World-Growth.

GEOGRAPHIC NOTES

AGRICULTURAL EXPORTS

THE distribution of the agricultural exports of the United States for the years 1896 to 1900 are given in a recent report of Frank H. Hitchcock, Chief of the Division of Foreign Markets of the Department of Agriculture. The figures show that during the year 1900 there were twelve countries to each of which the United States exported over $10,000,000 worth of domestic farm produce. A total of $408,000,000 was purchased by the United Kingdom, while Germany bought $134,000,000 worth. The agricultural exports of the country to the United Kingdom during the year were the greatest on record, excepting those of the year 1898, when a total value of $439,000,000 was reached. In regard to Germany, the exports show an increase of about 100 per cent in the five-year period. Following the countries above named come others in the positions indicated:

The Netherlands, $52,000,000; these figures being exceeded only in 1899 by less than $1,000,000; France, $45,000,000; Belgium, $33,000,000, as against $31,000,000 in 1896 to France and $18,000,000 to Belgium during the same year; Italy, $24,000,000; Canada, $21,000,000; Japan, over $15,000,000; Denmark, nearly $15,000,000; Cuba, $14,000,000, as against $4,000,000 in 1896; Spain, $10,500,000, as against a trifle less than $10,000,000 in 1896; British Africa, $10,300,000. Exports ranging in value from $5,515,000 down went to more than a dozen different countries.

The total exports of domestic farm products to Cuba, Porto Rico, Hawaii, and the Philippines in the year 1900 attained an aggregate value of over $20,000,000, an increase of some 300 per cent over the year 1896. In the case of South America, however, the total showed a decline. A very striking gain was made on the Asiatic Continent, where the exports in value rose from $5,735,000 in 1896 to $9,452,000 in 1900.

Traffic on the Suez Canal.—Only two of the nations having any commercial marine had a lower record than the United States in the amount of shipping passing through the Suez Canal last year. The United States stood twelfth on the list of nations, with only .6 of 1 per cent of the shipping passing through the canal, and the two nations below that were Turkey, with .3 of 1 per cent, and Belgium, at .1 of 1 per cent. Even nations like Japan, Italy, Spain, Denmark, and Norway exceeded our record, while Great Britain had 56.7 per cent, and Germany 15 per cent.

No News of Captain Sverdrup and the *Fram* is brought back by the Peary relief ship *Erik*. At Disco Inspector Jansen and Governor Neilson reported that in March, 1901, a steamer was seen far off the shore, in Davis Straits, heading northward, which might have been the *Fram*. Peary's failure to meet her or discover any trace of her work in his Greenland coast journeys lends color to the generally accepted theory that, finding a high northern latitude impracticable, she has attempted the upper Jones Sound and the little known lands and waters to the westward.

The Expedition sent out by the Duke of Abruzzi to search for the three lost members of his Polar expedition has returned without finding any traces of the missing men. The southern coast of Franz Josef Land having been explored without avail, the memorial to the three men arranged for by the Duke was erected on Cape Flora.

Dr. Robert Stein, who embarked at Etah in the *Windward* about the time of the sailing of the Peary party, has reported the safe arrival of that vessel at Brigus, Newfoundland.

Erratum.—Page 326, first column, line 10, instead of Gerhard "Kaufmann" read Gerhard Kremer.

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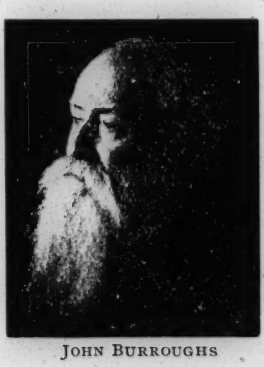

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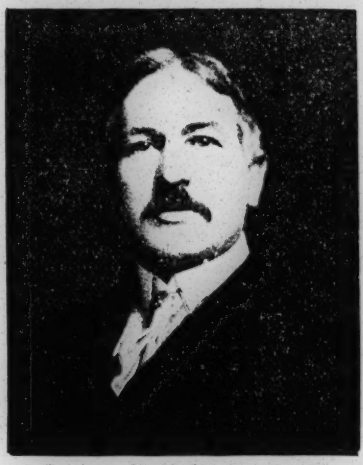

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